

## BIOSAFETY LEVEL 2/3 LABORATORY PRACTICES

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## Principles of Biosafety Introduction

- **Biosafety Levels 1-3**
- Guidelines to describe combinations of:
  - Laboratory Practices and Techniques
    - Standard Practices
    - Special Practices
  - Safety Equipment (Primary Barriers)
  - Laboratory Facilities (Secondary Barriers)

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## Principles of Biosafety Introduction

- **Biosafety Levels 1-3 Provide**
  - Increasing levels of personnel and environmental protection
  - Guidelines for working safely in microbiological and biomedical laboratories

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## Lab Practices and Techniques

### Introduction

- Knowledgeable supervisor
- Personnel
  - Aware of potential hazards
  - Proficient in practices/techniques
- Biosafety manual specific to lab

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## Safety Equipment

### (Primary Barriers) - Introduction

- Biosafety cabinets (BSCs) [BSL-2/3]
- Personal protective clothing
  - Gloves
  - Gowns
- Pipetting Devices
- Safety centrifuge cups and rotors
- Eye and face protection
- Respiratory protection [BSL-3]

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## Biosafety Level 2

### Needles & Sharps Precautions

#### •DON'T

- Break, bend, resheath or reuse syringes or needles

#### •DO

- Use sharps containers



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## Biosafety Level 2

### Needles & Sharps Precautions

•So someone won't be injured later



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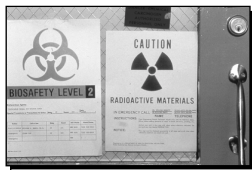
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## Biosafety Level 2



- Policies and procedures for entry
- Biohazard warning signs
- Biosafety manual specific to lab
- Training with annual updates

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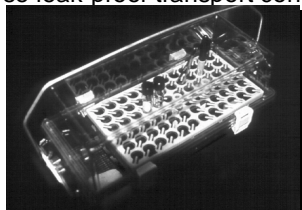
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## Biosafety Level 2

- Use leak-proof transport containers



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## Biosafety Level 2

- Immunizations
- Baseline serum samples



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## Biosafety Level 2

- Decontaminate work surfaces
- Report spills and accidents
- No animals in laboratories

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## Biosafety Level 2

### Safety Equipment (Primary Barriers)

#### •BSL-1 PLUS:

- Use biosafety cabinets (class II) for work with infectious agents involving:
  - Aerosols and splashes
  - Large volumes
  - High concentrations

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## Biosafety Level 2

### •Supervision

- Supervisor is a competent scientist with increased responsibilities
  - Limits access if immunocompromised
  - Restricts access to immunized

### • Lab Personnel

- Aware of potential hazards
- Proficient in practices/techniques

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## Biosafety Level 3

- Suitable for work with infectious agents which may cause serious or potentially lethal disease as a result of exposure by the inhalation route.

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## Biosafety Level 3

- Exposure potential to pathogens spread by aerosol
- Infection serious, possibly lethal
- Examples:
  - *Burkholderia mallei*
  - Yellow Fever virus
  - *Coxiella burnetii*

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## Biosafety Level 3

### •BSL-2 Special Practices

#### PLUS:

- Work in certified BSC
- Use bioaerosol-containing equipment
- Decontaminate spills promptly



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## Biosafety Level 3

### Safety Equipment (Primary Barriers)

### •BSL-1 and 2 Safety Equipment PLUS:

- Respiratory protection may be indicated



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## Biosafety Level 3

### •Supervision

- Supervisor is a competent scientist experienced working with agents
  - Establishes criteria for entry
  - Restricts access
  - Develops policies/procedures
  - Trains lab personnel

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## Biosafety Level 3

- **Lab Personnel**

- Strictly follow guidelines
- Demonstrate proficiency
- Receive appropriate training
- Report incidents
- Participate in medical surveillance

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## Principles of Biosafety Summary

- **BSL 1-3**

- Standard Practices
- Special Practices
- Safety Equipment (Primary Barriers)
- Laboratory Facilities (Secondary Barriers)
- Building (Tertiary Barriers)

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